Original Article

Community perception regarding diarrhoea management practices in a tribal predominant aspirational district of Odisha: A mixed-method study

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Abstract

Context: Childhood diarrhea is still a major problem in developing countries, and the condition is worse in tribal areas. **Aims:** The study aims to assess the community perception related to diarrhea management in an aspirational district of Odisha, India. **Subjects and Methods:** A mixed-method study was conducted in Kandhamal, an aspirational district of Odisha, Eastern India, from June to October 2018. An in-depth interview was conducted among community health workers, and a cross-sectional survey was done for the household interview. The data were collected in a mobile-based application, Epicollect5, and in-depth interviews were recorded digitally. **Statistical Analysis Used:** The data were analyzed in the Statistical Package for Social Sciences (SPSS) version 22.0. Categorical variables are presented in proportions. Force-field analysis was conducted to assess the driving and restraining forces of diarrhea. Content analysis was done for the digitally recorded data. **Results:** Nine out of ten people were aware of the benefit of breastfeeding during diarrheal episodes in children aged under 5 years, and <50% were aware of zinc benefit. Poor sanitation, lack of safe water, poor hygiene practices, socioeconomic status, and illiteracy are the major challenges in diarrheal control in the tribal area. **Conclusions:** Improving the demand by creating community awareness regarding management of diarrhea, availability of essential drugs (ORS and zinc) at the community level, and capacity building of community health workers for management of diarrhea can reduce diarrhea-related morbidity and mortality in tribal areas of India. Handwashing, hygiene practices, and availability of safe water need to be promoted in the tribal region. In the long term, the socioeconomic determinants have to be addressed.

Keywords: Aspirational district, childhood diarrhea, diarrhea, tribal population

Introduction

In this twenty-first century still, children under 5 years of age are dying due to diarrhea, and it is the fifth leading cause of death.[1] It accounts for 8% of deaths worldwide among children less than 5 years of age in 2016, which corresponds to around 480,000 deaths every year. Deaths due to diarrhea have decreased by 56.5% in children younger than 5 years of age since 2000, and the morbidity due to the same has decreased by 59.3%. The incidence of diarrhea has decreased by 12.7% from 2000 to 2016 among children younger than 5.[2] In India, the estimated mortality due to diarrhea in children between 0 and 6 years age group was 9.1%.[3] According to the National Family Health Survey-4 (NFHS-4), the prevalence of diarrhea was found to be 9.2% in children under 5 years of age.[4] In Odisha, the prevalence of diarrheal disease was higher (9.8%) than the national average.[5] Diarrheal

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Received: 31-01-2021 **Revised:** 04-07-2021
Accepted: 09-07-2021 **Published:** 29-11-2021

Access this article online

Quick Response Code:

Website: www.jfmpc.com

DOI: 10.4103/jfmpc.jfmpc_230_21

How to cite this article: Behera P, Bhatia V, Sahu DP, Sahoo DP, Kamble RU, Panda PS, *et al*. Community perception regarding diarrhoea management practices in a tribal predominant aspirational district of Odisha: A mixed-method study. J Family Med Prim Care 2021;10:4110-6.

deaths are usually clustered in summer and monsoon. It affects the children from poor socioeconomic status badly. The situation is worse among geographically inaccessible and remote districts.

Intensified diarrhea control fortnight (IDCF) had been launched by the Ministry of Health and Family Welfare in June 2017 to intensify the efforts to reduce child mortality due to diarrhea.[6] The goal of IDCF is to achieve zero diarrheal death. Given the increased burden of dengue and malaria in the state of Odisha, the state government, along with the national health mission, decided to integrate IDCF with the malaria, dengue, diarrhea (MDD) campaign and to continue the intensified activity for diarrhea for a month instead of a fortnight. The activities of MDD mainly included intensification of advocacy and awareness generation activities for diarrhea management, strengthening service provision for diarrhea case management, the establishment of oral rehydration solution (ORS) and zinc corners, prepositioning of ORS by accredited social health activists (ASHAs) in households with 5 children aged under 5 years and awareness generation activities for hygiene and sanitation. In addition to that, the training of health workers [doctors, auxiliary nurse midwives (ANMs), and ASHAs] was carried out for better management of diarrhea and reduction of diarrheal deaths.

Relevance of the study

Though diarrheal incidence and mortality in the country are in decreasing trend, it remains high in the tribal-dominant areas. The study has been undertaken to assess the community practices related to the management of diarrhea in an aspirational district.

Subjects and Methods

Kandhamal is one of the districts included in the aspirational district program launched by the Govt. of India in 2018, having a population of 0.7 million.[7,8] It is a tribal-dominant district having 52.9% of the population belonging to different tribes, situated in the southern part of the state.[8] The name of the district was after the name of the tribe "Khonds" who used to dwell on the land. Its difficult geographical terrain is a challenge for health care providers and the government to provide timely services during the diarrheal season. This district consists of 12 blocks, out of which 10 are designated as Intensified Diarrhea Control Month (IDCM) priority blocks, considering the high incidence of diarrhea. The study was conducted in 10 IDCM priority blocks of Kandhamal districts [Figure 1].

This mixed-method study was conducted from June to October 2018. One village was selected from each block, and households were sampled from each village. Both the villages and households were selected randomly using a random number generated from Microsoft excel. Out of ten villages, one village size was large, consisting of 606 households; however, the median household size was 137 for the other nine villages. Therefore, 15 households were interviewed in that particular village to get adequate information from that village. A total of 105 households were visited.

A semi-structured questionnaire was prepared and finalized after piloting among 20 participants. Households were interviewed by trained interviewers using a semi-structured questionnaire. Household-level data were collected about the practices of diarrhea management and feeding practices during diarrhea.

Knowledge of community health workers (CHW) was essential for the management of diarrhea and averting deaths due to diarrhea in infants. In-depth interviews (IDI) were conducted among the CHWs and the villagers to assess the community perception. No sample size was set for a priory, and enrolment was continued up to the relative information saturation was achieved. Enrolment and IDIs took place directly in the training venue of the IDCM program. The inclusion criteria for the in-depth interview were a) health workers of any age group, b) consented to participate in the interview, and c) a resident of the district at least for 5 years. Interview guidelines were designed for IDI and translated to the local Odia language. Information was noted in the Odia language and later on translated to English during interpretation. The interviewers had no prior personal relationship with any of the study participants. Ethical approval was obtained from the institute ethics committee of All India Institute of Medical Sciences, Bhubaneswar, with reference number: T/IM-NF/CM and FM/18/39 before the commencement of the study.

The data entered using Epicollect5 were extracted in an excel sheet. Data analysis was done using Statistical Packages for Social Sciences (SPSS) version 22. Categorical data were presented as proportion or percentage. IDIs were recorded digitally, and the digital recordings were transcribed. The transcribed information was translated into English and verified. Then, the content was analyzed. Force field analysis was done to find out the driving and restraining factors for diarrhea management. Content analysis was done for the recorded interview.

Results

A total of 105 households were interviewed during the study period. Among them, one-fourth of the participants were illiterate. As many as 18% of the participants had 5 years of formal education, and around half of the participants had 6–10 years of formal education. Only one-tenth of the participants had more than 10 years of formal education. More than two-thirds of the participants interviewed were housewives. Laborers and farmers constitute 19% and 8.6% of the study participants, respectively. Two of the study participants were students, and three were shopkeepers [Table 1].

Nearly 90% of the participants were aware of the continuation of breastfeeding during diarrhea. Around two-fifth of participants did not know the use and benefit of zinc during diarrhea. More than half of the participants preferred to have carbonated soft drinks rich in sugar content during diarrhea. [Figure 2] Most of the participants (58%) informed the ASHAs during any diarrheal episode. One-third of the households said they visited the nearest Primary health centre (PHC)/ Community health centre

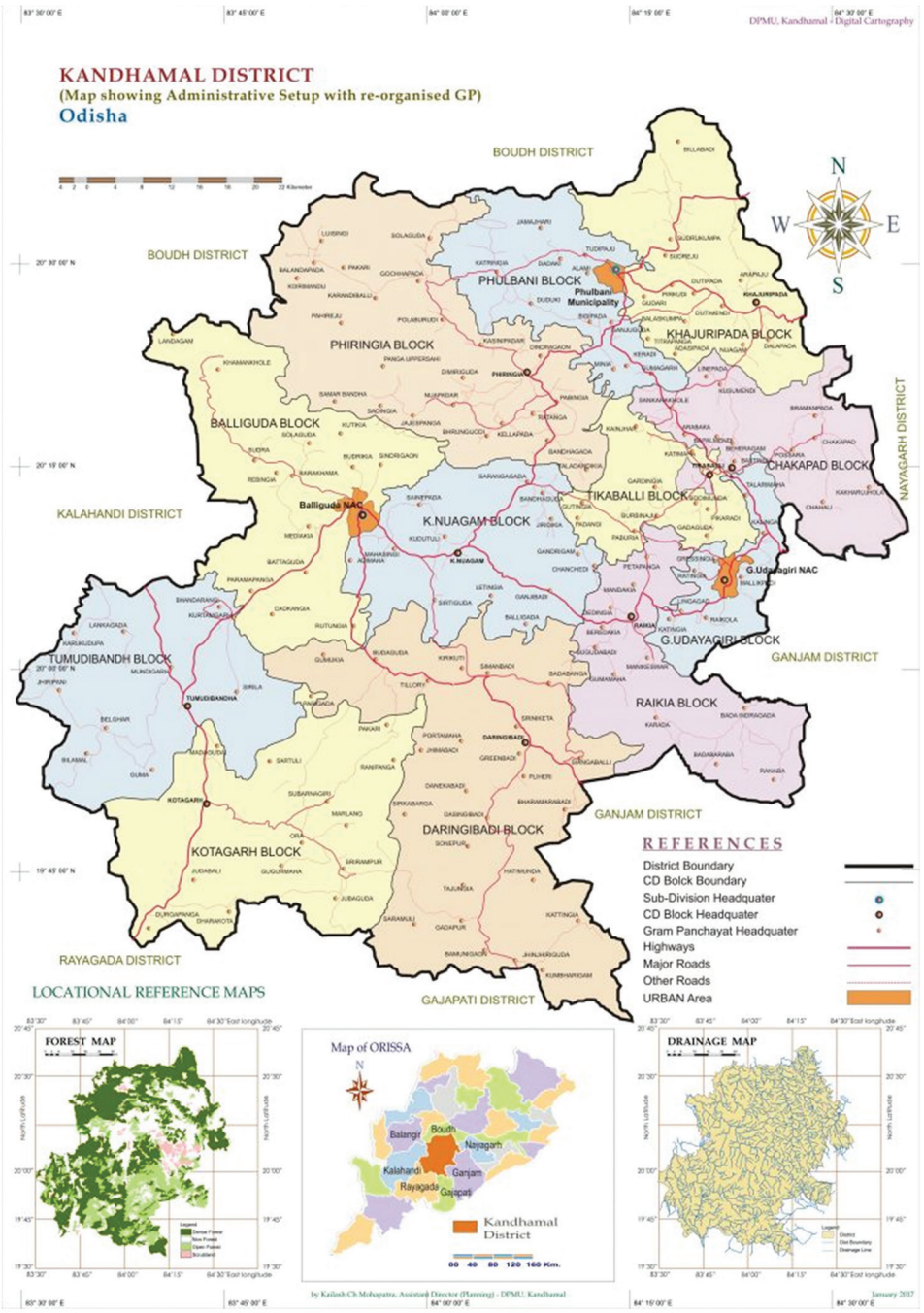

Figure 1: Study setting

(CHC) for treatment, and only 5% of the participants consulted private doctors for this complaint.

We also assessed the feeding practice of households during diarrhea. The most preferred food during diarrhea was arrowroot (paula in local language) powder, followed by flattened rice with banana, sugar candy, coconut water, rice and pulses, ragi, sago, and lime water. The people in the community usually avoid fried foods, spicy curry, fermented rice water, nonvegetarian food, and mixture recipe during diarrheal episodes [Table 2].

We tried to find out the driving forces and restraining forces of diarrheal incidence and mortality using force-field analysis from the in-depth interviews. Unhygienic environment, open field defecation, illiteracy, poverty, lack of transport, limited purified water source, lack of adequate treatment facility, lack of awareness, and poor health-seeking behavior were the significant restraining forces behind the high incidence and mortality of diarrhea. Similarly, the control of diarrhea driving forces were rotavirus immunization, exclusive breastfeeding, Swachh Bharat Mission, existing community health workers, IDCM campaign, chlorination of water sources, and free ambulance services [Figure 3].

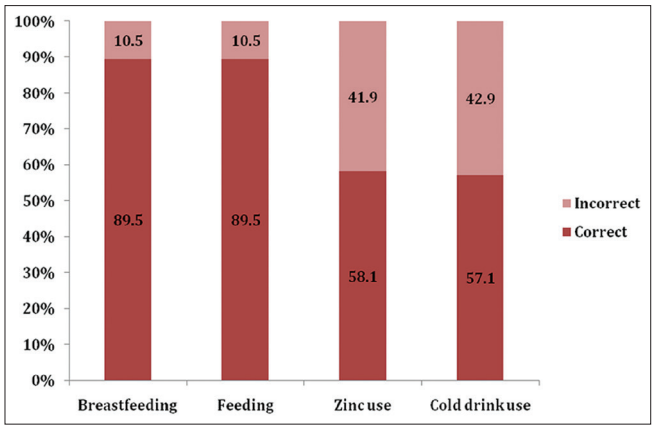

Figure 2: Community perceptions for diarrhea management among the tribal population (N = 105)

The in-depth interview reports the following misconceptions. People of the tribal-dominant area prefer to take carbonated drinks during diarrheal episodes. The tribal people mostly visit faith healers during any illness, including the diarrheal episode. Withhold of breastfeeding or feeding during diarrhea was practiced by some people to reduce the frequency of diarrhea. Faulty practices and misconceptions were prevalently related to diarrhea management in the tribal areas [Table 3].

Discussion

In our study, it was found out that around 90% of the study participants were aware of the benefit of continuing breastfeeding and feeding during diarrheal episodes in children. Breastfeeding gives significant protection against illness and death associated with diarrhea, it also minimizes the adverse nutritional effects. The promotion of breastfeeding is beneficial in diarrheal disease prevention.[9] A study was done by Mihrshahi *et al.*[10] in Bangladesh also reported that the prevalence of diarrhea and acute respiratory infections were significantly associated with a lack of exclusive breastfeeding. Breastfeeding is also useful in reducing the amount and frequency of stool.[11] More than half of the study participants used carbonated drinks containing a large amount of glucose, which can be a cause of osmotic diarrhea.[12,13] Jousilahti *et al.* also found similar findings for breastfeeding during diarrhea, where 96.3% of the participants continued breastfeeding during diarrheal episodes. Othero *et al.*[14] found much less proportion (58.6%) of children affected by diarrhea were exclusively breastfed. Whereas only 69.8% of the participants in the study by Jousilahti *et al.*[15] continued feeding during diarrhea, and it was appreciably high (89.5%) in our study. A study by Choube *et al.*[16] found that 62.1% knew about continuing breastfeeding during diarrhea, which was much lesser than our study. The higher result in our study could be the result of awareness generated by the CHWs during the IDCM drive. Decreased feeding was considered as one of the factors that cause complications in diarrhea. Othero *et al.*[14] found that more than three-fourths of the participants continued the same food during diarrhea. They also found that the fluid intake during diarrheal episodes was much less in around 85% of the cases.

Table 1: Socioeconomic status of study participants (*n*=105)

	Participants (%)
Education of Participants	
Illiterate	26 (24.8)
Up to 5th std	19 (18.1)
6th-10th std	48 (45.7)
Above 10th std	12 (11.4)
Occupation of participants	
Housewife	71 (67.6)
Laborer	20 (19.0)
Farmer	9 (8.6)
Others*	5 (4.8)
Total	105 (100.0)

*Two were students and three were shopkeepers

Table 2: Community perception of food during diarrhea among the tribal population

Food preferred during diarrhea	Food to be avoided during diarrhea
Arrowroot (palua in Odia)	Fried foods
Flatten rice (chuda) + banana	Spicy curry
Mishri (sugar candy)	Fermented rice water
Coconut water, lime water	Nonvegetarian food
Rice and pulses	Mixture recipe
Ragi, sago,	Rice + roti (bread)
Hot rice	
Hot jalebi (an Indian sweet made of a coil of batter-fried and steeped in syrup)	

Ogunrinde[17] found only one percent of the study participants were knowledgeable about home management during diarrheal disease.

In the present study, more than half (58%) of the study participants contacted the ASHAs, whereas 37% consulted the nearest public health facilities (PHC/CHC), and only 5% consulted a private doctor during diarrheal episodes. This result was different from that of the study done by Jousilahti *et al.*,[15] where two-fifths (39.6%) of the participants consulted private doctors. This disparity in the results can be due to the unavailability of doctors in the tribal region. Another reason for the result can be because ASHAs were the easily accessible and first point of contact for any health-related services in tribal areas or hard-to-reach areas. Choube *et al.*[16] in Moradabad, Uttar Pradesh, found that 54% of the community consulted a public health facility during any diarrheal episode, whereas 14.4% went for a private health facility, and the rest all contacted others like a quack, pharmacy, and traditional healers. This health-seeking behavior was quite similar to our study. Sood *et al.*[18] in Haryana found that only 12% of the households contacted CHWs, and 18% consulted a registered medical practitioner for a diarrheal episode. All others used traditional or home remedies. In our study, most of the participants approached the CHWs; it can be the effect of the intensive diarrhea control drive during the diarrheal season. As CHWs are provided with most of the

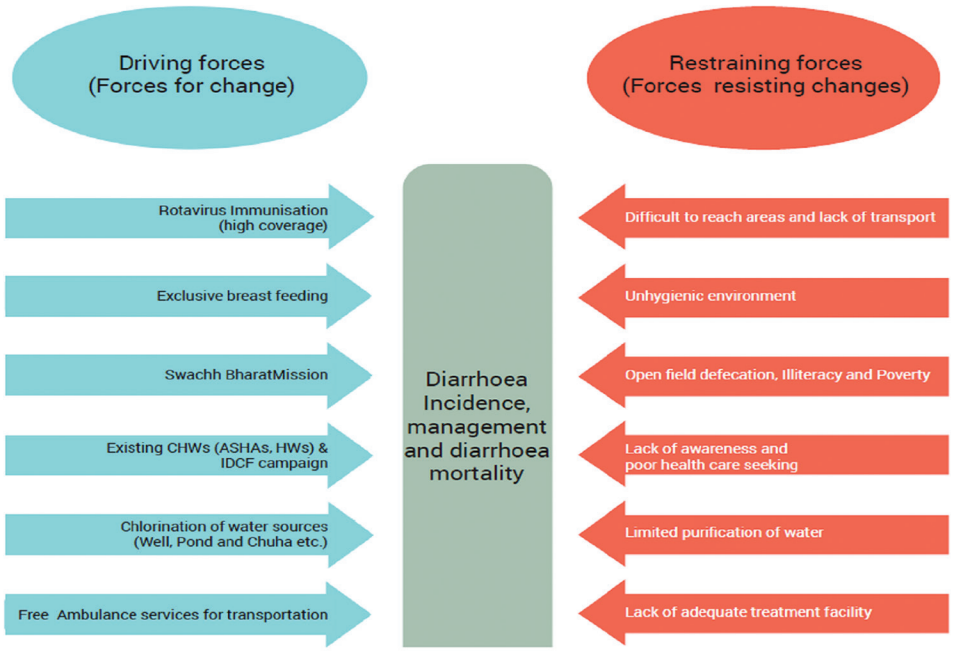

Figure 3: Force-field analysis for diarrhea incidence, management, and mortality

Table 3: Misconceptions, faulty practices, and limitations related to diarrhea control

Limitations	Faulty practices	Misconception
Low socioeconomic status: Low socioeconomic poses various challenges to maintain hygiene.	Open defecation: Open field defecation contributes to an unhygienic environment, unsafe drinking water.	Illiteracy: The literacy status of the tribal population is a major obstacle in tackling infectious diseases.
Hand washing practices: People are not washing their hands before eating and after defecation.	Unhygienic food and water: Nonavailability of safe drinking water and poor hygiene practices lead to frequent diarrhoal episodes, specifically in the rainy season.	Withholding breastfeeding/feeding during diarrhea: Few tribal people stop breastfeeding/feeding during diarrheal episodes to decrease the frequency of diarrhea.
Lack of awareness: People are not aware of the cause of diarrhea and its management.	Improper treatment: Treatment was inadequate during diarrhea episodes for the tribal people.	Faith-healers: Faith healers remain the first point of contact for diarrhea management for some tribal people.

essential drugs (ORS and zinc) to treat diarrhea, the community approach towards the health worker during the diarrheal episode can be considered appropriate to prevent mortality in childhood. Ellis *et al*.[19] also found that parents tend to shift care of the child from home management to CHWs or a community health center. In our study, none of the participants changed their health care provider during the management of diarrhea. which showed the trust of the tribal population on the CHWs. As in tribal community grandparents also stay in the same family, traditional medicines used to be the first management in case of diarrhea. In such cases, the role of CHWs in diarrhea management will be highly beneficial for the community. A study was done by Mohanta *et al*.[20] in Mayurbhanj, a tribal district of Odisha, also reported that the community usedamarpoei (*Kalanchoe pinnate*) leaves and guava leaves for treatment of diarrhea.

Nutrition during a diarrheal episode is an important aspect to prevent malnutrition and mortality due to diarrhea. In a few communities, feeding is stopped during diarrhea, thinking that this will reduce diarrhea, but it worsens the complications. We found out that people in the tribal community preferred to flatten rice with banana, arrowroot (palua in local language) [Figure 4], coconut water during diarrheal episodes, whereas they usually avoid fried foods, spicy foods, and nonvegetarian foods. Singh *et al*.[21] found the preferred food during a diarrheal episode in a rural community of Jaipur, Rajasthan, was khichri, daliya, banana, and curd, whereas they tend to avoid roti (bread), milk, chilies, and hot foods. Sood *et al*.[18] in Haryana found that 83% of the households practiced restricting food during a diarrheal episode. Khichri, made up of moong dal and curd, was the preferred food item for the community in Haryana during a diarrheal episode.

Availability of safe water, proper sanitation, and hygiene practice showed to be effective in the reduction of diarrhea-related mortality.[22] The people of the tribal area face difficulty in getting round the clock safe drinking water due to the difficult terrain. Poor sanitation and hygiene practices in the tribal area could be due to illiteracy and lack of awareness. There is a need to create awareness regarding proper sanitation and hygiene practices among the tribal people.

Figure 4: Arrowroot plant (left) and arrowroot powder (right) preferred during diarrhea

Strength and limitations

This study focused on the tribal community and assessed the health-seeking pattern along with other components of diarrheal management. We interviewed CHWs, who were from the same community and had vast experience of working with the tribal community. The household survey was with a limited sample size. We did not assess the ORS preparation process, which could be a vital component of diarrhea management. As the study explores, the majority of the population has belief in CHWs and public health care facilities; this could be wisely used by building the capacity of CHWs in providing care and change agents for the desired outcome.

Conclusion

Improving community awareness about diarrhea management, capacity building of CHWs, availability of essential drugs like ORS and zinc at the community level is vital for diarrhea control programs in tribal areas. Handwashing, hygiene practices, and availability of safe water need to be promoted in the tribal region. In the long term, the socioeconomic determinants have to be addressed for control of diarrhea.

Acknowledgments

We acknowledge the Director of National Health Mission, Odisha, Ms. Shalini Pandit, and the Chief District Medical Officer of Kandhamal, Dr. Ramesh Chandra Panda for their support during the survey. We are also thankful to Dr. Sarika Palepu, Dr. Preeti PS, and Dr. Ranjeeta Nayak for their support in the data collection of the study.

Key Messages

Diarrhea is still one of the important causes of morbidity and mortality in the tribal area of India. Open field defecation, illiteracy, poverty, poor hygiene practices, nonavailability of safe drinking water, and poor health-seeking behavior were the important restraining forces behind the high incidence and mortality of diarrhea. The indigenous population prefers arrowroot powder to reduce the frequency of diarrhea. Faulty practices and misconceptions are prevalent in the tribal areas in the context of the management of diarrhea.

Financial support and sponsorship

The study was funded by UNICEF. Grant Number BHU/HEALTH/2018/305.

Conflicts of interest

There are no conflicts of interest.

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